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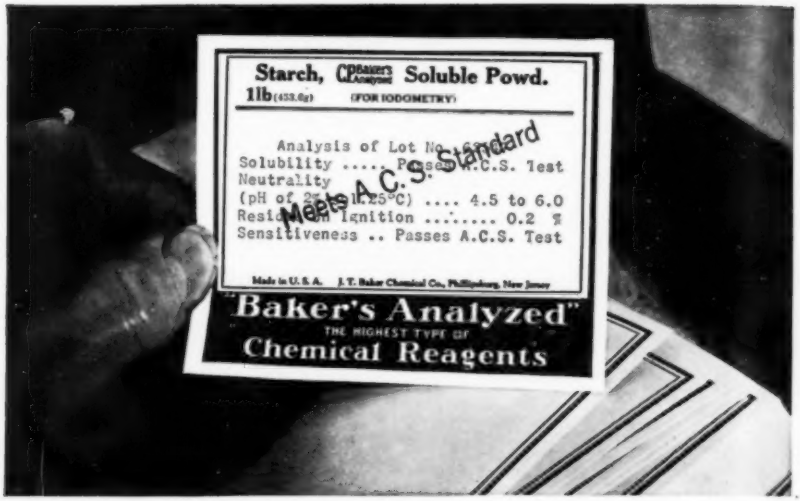
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The Chemist

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.
60 East 42nd Street, New York 17, N. Y.

Volume XXIV November, 1947 Number 11

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Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N. Y. Subscription price, $2.00 a year. Single copy, this issue $0.25.

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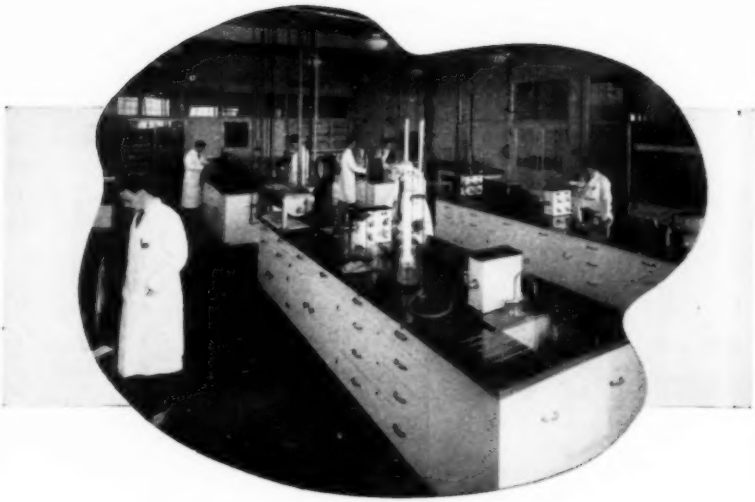

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Better Health Through Science

Dr. Ernest H. Volwiler
Executive Vice President, Abbott Laboratories, Chicago

(An address in acceptance of the Honor Scroll Award, which was presented to him by the Chicago Chapter of the American Institute of Chemists, October 10, 1947.)

SCIENCE has reached the place where we cannot live without it, and we wonder just how we are going to live with it. The natural sciences are sometimes accused of bringing us to this present state of confusion and uncertainty, yet few of the accusers would be willing to forego the benefits which science has brought. The trouble is that our social adaptability has lagged behind our scientific understanding. The difficulty is not with our knowledge but with our misuse of it. We cannot prevent man from adding to his knowledge, but we need not be too pessimistic in our hopes that he will learn how to use that knowledge peacefully and properly.

Extensive though our scientific information is, no one should assume that man has made more than a few dents in the ball that we call knowledge. It is in fact "The Endless Frontier." To penetrate further, we need more men, more facilities, and particularly more education. Dr. Raymond Fosdick of the Rockefeller Foundation has expressed what is in many of our minds: The war has used up a dangerously large portion of our supply of fundamental scientific knowledge, and now we are critically short of trained men and women, particularly in our universities, on whom we must rely to replenish our stock. "We have used up our seed corn. The practical applications of knowledge are the dividends which science from time to time declares. When basic science is even temporarily interrupted, then it is necessary to pay these dividends out of surplus, and obviously this process cannot be long-continued without bankruptcy."

National Science Foundation

The National Science Foundation legislation was intended largely to enable the United States to put new fundamental scientific discoveries into the bank of knowledge, whose deposits had become badly depleted during the war. Some people have misgivings about the Government being given another foothold in what has been, until now, largely the concern of private enterprise. Interestingly enough, the President vetoed the bill passed by Congress not because it

took responsibility away from private enterprise, but because it gave too much power to a Board that was somewhat independent of Government control. However, the large majority of the public, the scientists, and the Congress appear to favor a National Science Foundation, largely under the control of non-political civilians, because at present there is in sight no other source of adequate financial support. By the time the legislation comes up for reconsideration there may be new arguments both for and against it. It may be that a workable plan for greater support of fundamental research by private money can be evolved out of the suggestion that tax laws be modified to provide more liberal tax exemption for money spent in the support of research.

One of the fields for which a National Science Foundation would provide support is medical research. Since, as Ruskin wrote, "There is no wealth but life," hardly anyone would disagree with the premise that more effort and money should be spent on research in the medical sciences. To illustrate this, it may be pointed out that, in 1947, the Federal Government spent more on the study of causes and cures of plant and animal diseases than it did for medical research applied to man. Certainly the conservation of health, our most valuable single asset, justifies a greater proportion of total effort than it has received up to now.

The Influence of Chemistry on Health

Less than a half-century ago, the average life expectancy of an American was under forty years; today it is well over sixty years. What is the reason for this improvement? There are a number. Man is living a more protected, a less dangerous life, nullified partly by such death-dealing instrumentalities as war and machines. An important contributor to longevity is improved sanitation and health maintenance. We know better what and how much to eat. There is another factor, however, which runs like a strong thread continuously through the advances of medicine and ties them together. This factor is chemistry, allied with a number of other sciences like physics, bacteriology, and pharmacology. Chemistry and medicine have grown up together. At first chemical agents were used mainly for the relief of symptoms, in the belief that only the body itself could destroy the causes of disease. This was a pessimistic assumption which has since been shown to be wrong. Specific hormones and vitamins were discovered which can prevent as well as cure; and equally specific chemotherapeutic agents coming from the mind and the laboratory of the chemist have given us a degree of control over diseases of protozoal and bacterial origin which

could hardly have been imagined early in our present century.

A large proportion of our maladies are caused by living organisms which after entering our bodies multiply greatly and either poison the cells or prevent them from obtaining proper nutrition. Some of these invading organisms are large and complex living bodies, like the hookworm of the warm regions; others are small animal parasites, called protozoa, which cause diseases such as malaria and sleeping sickness; and a still more extensive group are the bacteria, of vegetable type, which produce so many of the infections with which we are only too well acquainted. Smallest of all are the viruses, with which we now have at least a speaking, though unpleasant, acquaintance. Until fifty years ago, few of these classes of parasites could be dealt with very effectively. Either the patient succumbed, or if he had inherited a particularly stalwart constitution he might survive. Chemicals introduced into the body were likely to be almost as toxic for the patient as for the invading organism.

The first great break in this impasse came in 1910, when Ehrlich introduced arsphenamine for the treatment of syphilis. It was a great advance, and at once led to much effort to attack all sorts of other invasions by chemotherapeutic means. For several decades few of these succeeded. The results from the use of chemical agents against diseases caused by pathogenic bacteria were so disappointing that many assumed that the principal hope lay in the use of immunological agents, that is serums and vaccines. Once again a milestone was passed when the first sulfonamides were discovered and used in 1935. Diseases such as septicemia, pneumonia, meningitis, and a host of others could now be treated successfully. This time the doubters were convinced that there were bright prospects of effectively controlling practically all afflictions caused by bacteria, if enough research was done to find the proper drugs. The later development of penicillin has given impetus to these high hopes.

Antibiotics

The story of antibiotics has often been told, but it would not be proper to omit some further reference to them. Tyrothricin and gramicidin were the first antibiotics to be produced commercially, at about the time World War II began. These products are useful for treating certain local infections, but are too toxic to be used internally. That is why penicillin is so interesting. Its toxicity is so low as to be almost nonexistent for all practical purposes; yet it is extremely toxic to many bacteria, including the pus-forming bacteria, against which sulfonamides are of more limited use. No wonder then, that more effort has gone into the research and production of penicillin

and other antibiotics than in the case of any other class of drugs.

Until this year, no significant amounts of penicillin were produced outside the United States and England. In 1943, production was just beginning, but now sales of U. S. penicillin amount to approximately $100,000,000 per year—and this in spite of the fact that the cost has been reduced from $20 per vial to about 30 cents, due to greatly improved processes of manufacture. In fact, the price has been so greatly reduced that the cost of the bottle, standardization, and packaging is greater than that of the penicillin it contains. The potency is so high that our total national production represents only about twenty tons of pure penicillin per year; but to produce it, more than 100,000 tons of intermediate chemicals are required, together with much larger plant installations than are common for the production of fine chemicals.

Such success with penicillin has led to great activity in the search for other antibiotics which might be effective where penicillin fails. The most outstanding example is streptomycin, which is effective against tularemia, certain urinary infections, and gives strong promise of being a very useful adjunct to other methods of treating tuberculosis. In continuing this attack on disease, molds and other organisms as potential sources of new antibiotic are being isolated from samples of soil collected from all parts of the world. It is not too much to expect that agents useful against other maladies will thus be found, although to develop such new ones is a long and arduous task. The mechanism by which fairly simple organisms, like molds, produce quite complicated chemical molecules cannot always be matched by the skill of the chemist in his laboratory. It is possible, but by no means certain that the fermentation plant rather than the chemical laboratory will continue to supply our needs for some of these antibiotics. The chemist, however, must supply the means for processing these agents, and he, furthermore, posesses the ability to "tailor-make" variants of such products which the living micro-organism may not be able to do.

Anaesthesia

Although the discoveries of the sulfonamides and antibiotics have overshadowed other developments during the past ten years, very marked advances have occurred in other medicinal fields. The use of intravenous anesthesia has become commonplace, particularly since it was so valuable and became so well-established during the war. When we remember that general anesthesia is just about a century old, while effective local anesthesia is considerably younger than that, it is easier to realize how far we have advanced in removing the pain and shock associated with operative procedures. The man or woman who

was anesthetized twenty-five years ago and again in recent years can give eloquent testimony to this progress.

The relief of pain, aside from that associated with anesthesia, has had an interesting history. Morphine, which has sometimes been placed at the top of the list of valuable drugs, was discovered more than a century ago. Until recently it has had practically no rival. Drugs for the relief of mild pain have been discovered, such as aspirin and phenacetin, but in spite of some rather extensive efforts no new drugs were developed which would relieve severe and intractable pain. Just recently, however, morphine has encountered a synthetic rival for many of its uses. Called Methadon, it is one of the few drugs of outstanding value developed in Germany during the war. It is outstanding in its effects, equal and even superior to morphine in many of its uses, and its tendency to produce habit-formation is much less than that of morphine.

Drugs for Relief of Allergy

It has been estimated that from five to ten per cent of our population shows symptoms of allergy. While very few people die directly as the result of attacks of hay fever, asthma or urticaria, those who are so afflicted are quite uncomfortable and their efficiency and contentment are markedly reduced. The past two years have brought about some outstanding new synthetic compounds for the treatment and relief of allergic symptons, and extensive research now under way promises to lead to other effective products. Aside from the greater comfort thus afforded to the patients, the economic gain will be exceedingly large.

The Problem of Cancer

It would be useless to mention cancer, except as an unsolved problem, were it not for the careful work now under way which gives more hope of ultimate success. For the first time, the problem of cancer is being attacked with fairly extensive personnel and funds. There are already some indications that certain chemicals may be effective and the hope is not unwarranted that within five to ten years newer and better chemical agents may be discovered which can be used to destroy or inhibit the growth of cancer cells without too much danger to the host. The newly available radioactive elements may also find application here.

There is even the possibility that cancer may be transmitted through the intermediation of certain viruses. If this should be the case, it is all the more important that the studies of these minute organisms should be rapidly extended and expanded. Although no means are yet known by which viruses can be neutralized or destroyed in the body, fundamental studies such as those of Stanley will no doubt lead to more direct attacks

on the legion of incapacitating and often fatal infections which viruses produce.

Drugs for Malaria

Taking the world as a whole, the most devastating of all diseases is malaria. It causes several million deaths each year and the disability of hundreds of millions more. It incapacitated approximately 100,000 men of our armed forces in the South Pacific and for a short time jeopardized the success of the military campaign in that area. Malaria caused more than five times as many casualties in the South Pacific as did combat.

There are several ways in which malaria can be overcome. The first is one of sanitation and removing or making uninhabitable the bodies of water which are the breeding places for the mosquito. The second method involves the use of preventive drugs such as quinine, which in the war was superseded by the more satisfactory Atabrine. During the war years, the extensive search for new antimalarials led to the testing of about 15,000 compounds, of which a few showed marked promise. One of these, called Chloroquin, is already available for prophylaxis. Another, developed in England under the name Paludrine and called Chlorguanide in the United States, produces similar results. These drugs are effective for the prevention of malaria attacks, but not very effective for the treatment of the common vivax type of the disease after the patient has come down with it. The new drug Pentaquin was developed for this purpose.

Tropical Diseases

Malaria is only the leader of a list of so-called tropical diseases whose ravages seem to be almost endless. There is yellow fever, schistosomiasis, dengue, African sleeping sickness, and a number of others. We have means for keeping most of these under control and it just depends on how much money and effort the world is willing to spend for that control. There are probably one to two million lepers in the world and in the last few years chemotherapeutic products have become available which, in many instances, arrest the disease and permit those who are afflicted to return to normal living. Typhus, which can be so devastating, particularly under the stress of war, poverty and ignorance, can likewise be controlled effectively by a combination of sanitation and the use of vaccines and other drugs.

Radioactive Materials

Only time will tell whether the beneficent effects of atomic energy will counterbalance its use for destructive purposes. On the favorable side of the ledger, a very promising outlook is provided by the biological use of radioactive materials, both for treatment of disease and for gaining more information about the mechanisms within the body. These products

of atomic fission will become available in ample amounts. It will be possible for a physician in treating a disease to select a radioactive element having a suitable lifetime, and the decay of the element will limit the total dose. Radioactive-iodine is being successfully for the treatment of hyperthyroidism; radioactive-phosphorous for leukemia and for certain blood and lymph node diseases; radioactive-gold is giving us a better insight into the nature of arthritis and it may also provide a usable treatment. Perhaps nine or ten of all the radioactive isotopes that have been made give promise of therapeutic usefulness.

The use of radioactive elements as tracers for chemical or biological research is as important as their use as drugs. Certain elements can thus be tagged and followed through the body to determine how food is metabolized and how and where drugs act. The amounts required are so small that the elements can be kept well below the toxic level. It has been stated that no chemist today can offer a wrong theory in such matters and get away with it, and that a medical scientist will no longer be able to postulate selective absorption which does not in fact take place.

Nutrition

To have and to maintain good health, we must inherit a reasonably good constitution from our forebears. If we are exposed to infection or become ill we need the best prophylactic, palliative, and curative agents that medical science can provide. There is a third factor intimately involved, and that is nutrition. Much more is known about this factor during the first half of a lifetime than for the last half. The studies that have been made in the last two decades on the elements of good nutrition, particularly proteins and vitamins, have yielded most significant results. For the world as a whole, however, the most important aspect of food is not quality or kind, but quantity. In 1798, Malthus first expounded his theory that the world's food supply could not keep up with the increase of the world's population. Apparently Malthus' theory was shown to be erroneous, when in later years, the food supplies of many nations exceeded their needs and glutted the market. This was due to the opening of arable lands in new parts of the world, and the use of improved methods of agriculture, better strains of seed, and synthetic fertilizers.

More recently, however, the world has begun to wonder whether Malthus may not have been right in the first place. There are fewer large new areas to be opened for agriculture. Older areas are becoming eroded so as to lose their usefulness. In the meantime, populations in certain parts of the world already teeming with people are increasing at an alarming rate. Of course, the populations of many occidental countries,

such as those of Europe, are nearing, if they have not passed, their peaks, and the number of people in our own country will perhaps cease to rise after another third of a century. In contrast, it has been estimated that the population of Russia will increase seventy-five million in the next twenty-five years, and by the time that country reaches its population peak their numbers will very largely exceed our own. The populations of China and India may double during the next century. Both countries can appreciably increase their food supplies.

However, it has been pointed out that increases in productivity through the advance of science and the development of resources can be only temporary palliatives, because economic productivity will be outstripped sooner or later by the uncontrolled growth of population. A similar situation prevails in Africa. The population increase for the last decade exceeded 1.5 per cent per annum which, if maintained, will double the population in less than fifty years. The factors which may limit growth of population are war, epidemic disease, famine, and voluntary control of the birth rate. Mechanized warfare would affect mainly the city populations in industrialized Europe and America. It would have relatively little effect upon the predominantly rural areas and populations of Asia and Africa. Epidemic disease can be controlled by quarantine and medical treatment. Famine is a more evident limiting factor on the growth of populations because in many parts of the world the matter of keeping body and soul together is already dangerously tenuous. The remaining one of the four factors, namely voluntary birth control, is unlikely to be widely adopted by the most congested areas of the world for generations to come, and therefore, cannot be counted upon to relieve the critical food situation.

The poorly-fed nation is likely to be both industrially unproductive and discontended, and thus the breeding place, not only for more people, but also world turmoil. The principal possible solution in sight is more education and knowledge, which, through better farming and greater industrialization, will permit such countries to become self-supporting and to live on a higher plane. History has shown that when this occurs, the rate of population growth will decrease. As this occurs, medical science will contribute its part by the prevention of epidemics, the cure of disease, and the approach to the ideal of buoyant health.

Quite a long time ago, Louis Pasteur crystallized some of these ideas in a remarkable way: "Two opposing laws seem to be now in contest. The one, a law of blood and death, opening out each day new modes of destruction, forces nations to be al-

ways ready for battle. The other, a law of peace, work and health, whose only aim is to deliver man from the calamities which beset him. The one seeks violent conquests, and the other the relief of mankind. The one places a single life above all victories, the other sacrifices hundreds of thousands of lives to the ambition of a single individual. The law of which we are the instruments strives even through the carnage to cure the wounds due to the law of war. . . Which of these two laws will prevail, God only knows. But of this we may be sure, that science, in obeying the law of humanity, will always labour to enlarge the frontiers of life."

E. H. Volwiler—Investigator, Editor, Executive

Director of Chemical Laboratories, American Medical Association

(A talk given at the Honor Scroll Award Dinner of the Chicago chapter of The American Institute of Chemists, October 10th)

AT THE turn of this century, and even until the period of the first world war, chemical education and chemical manufacturing in this country were relatively limited. We all know this, but we tend to lose sight of the tremendous strides in chemical production which have taken place in the last thirty years. From a position of almost abject dependence upon foreign sources for many raw materials and intermediates, the chemists of this country have developed chemical methods, processes, and a volume production which are the envy of the world.

Chemical education has advanced apace. Fortunately for our nation, chemists were in a position to play an essentially important role in the preparedness program undertaken prior to and during the late war. Today, we may look up to an increasing number of our fellow chemists as outstanding figures in chemical affairs. We can observe within one generation the multitude of public goods which have been made available through inventions or improvements brought about by chemists.

In the award of this Scroll, we honor a man who is well able to trace for us the marvelous development in the fields of medicinal and pharmaceutical chemistry — development which has contributed much to human welfare, brought relief from pain and misery to many, and helped to increase the expected life span of us all.

The gentleman whom we honor is a chemist. He is the sort of chemist

who serves as an outstanding example to others. His training, accomplishments and general deportment epitomize those professional qualities toward which chemists generally must strive. For that paramount reason, Dr. E. H. Volwiler receives the 1947 Honor Scroll.

When I think of Dr. Volwiler, the words, investigator, editor, and executive, seem best to fit my knowledge of his work. In each of these roles he has successfully applied himself with diligence and vigor.

Dr. Robert E. Wilson has told you of Dr. Volwiler's academic career. He had excellent teachers and his teachers had promising material with which to work. In qualifying for the Master of Arts degree at Illinois in 1916, he developed a method for the preparation of trimethylene oxide, a useful intermediate which had not been made before. His thesis for the Doctorate, in 1918, dealt with an entirely new type of reaction, that which occurs between aromatic acid chlorides and aromatic aldehydes, which proved to be a general reaction of considerable importance in synthetic work.

Publications and Work

A list of some fifty-eight published articles and patents in the medicinal field, which bear the name, E. H. Volwiler, alone or as co-author, testify to my choice of the word investigator. However, his contributions to the chemistry of medicinal products are not all reflected in published material. Much of his work has been concerned with the practical application of research training and the research method to the improvement of a wide variety of pharmaceutical products. At the outset of his career, he was responsible for the improved synthesis and production of several medicinals previously produced only abroad. As examples, mention should be made of his early work on methods for chlorine antiseptics and commercially feasible processes for making acriflavine and procaine. Later, after he had transferred to the laboratory and as his responsibilities widened, his work alone and in collaboration with others has led to the introduction of many new medicinals. Even though his subsequent duties with his company took him somewhat away from production, his early experience in the plant gave his research thinking a practical slant.

Early in his career he became intensely interested in the relationship between chemical structure and physiological activity. Always motivated by a desire to alleviate pain and suffering, his attention turned naturally to local and general anesthetic substances and to sedative and hypnotic drugs. His interest in this field and his work with others has resulted in the introduction of such products as Butyn sulfate, a water soluble local anesthetic; Butesin, a water insoluble local anesthetic; Neonal and Nembu-

tal, intermediate and fast-acting barbiturate compounds, respectively, and Pentothal Sodium, a thiobarbiturate of value as a quick-acting general anesthetic with a rapid recovery period.

In this work as in his work with antisyphilitic drugs, vitamins, hormones, sulfonamides, anticoagulants, and more recently antibiotics, such as penicillin and streptomycin, Dr. Volwiler has enjoyed the cooperation and collaboration of his colleagues. Always a keen student himself, he is equally keen to appreciate new ideas and the suggestions of others. He would be displeased, if I did not pay tribute here to all those men and women, chemists, biochemists, pharmacologists, physiologists, physicians, and business associates, who have worked with him over the years.

Editorial Experience

As an editor, our honored guest qualifies admirably. His early efforts as a writer took the form of contributions to his college paper. He graduated from this to membership on the editorial board of the *Illinois Chemist*, a quarterly publication of the Department of Chemistry of the University of Illinois. In fact, he was secretary of the editorial board, responsible for the foundation of that publication in November, 1915.

His interest in the American Chemical Society also was evident at that time, for he was active in the membership campaign which preceded the National American Chemical Society Spring meeting of April, 1916. It is not strange then that his interest in editorial matters and in the American Chemical Society were fused after he moved to Chicago.

Dr. Volwiler became a member of the editorial board of the *Chemical Bulletin* in February, 1922, with the publication of an editorial entitled, "The Physicians' Opportunity." Although Dr. Volwiler has done much to aid the physician in later years, at that time he was telling physicians of the opportunity which they had to aid chemists and chemical industry to become established on a firm basis in this country.

As editor of the *Chemical Bulletin*, he had the knack of eliciting the active support of a number of Chicago chemists who aided him by supplying many pertinent editorials. His own editorials reflected interest in research in industry, and the value of chemists and well-operated chemical laboratories, in the profitable development of businesses of many sorts. Many of his editorials had a strong effect on the subsequent development of the American Chemical Society—editorials which emphasize cooperation and coordination within the society and which championed the desirability of constructive criticism.

He was an early advocate of telling chemists, as well as others, of the chemist's importance in the development of a sound chemical position for the nation, independent of foreign

products and secure against the exigencies of war.

His continued interest in editorial matters is evident in contributions to the book, "Chemistry in Medicine," and in chapters on pharmaceuticals, on synthetic drugs, and on opportunities in medicinal chemistry in other books. These chapters, as well as his numerous published general articles and scientific papers, illustrate an excellent style enhanced by meticulous grammar, the latter adding emphasis to the clarity and logic of his ideas. It is not probable that his editorial interest will be lessened when shortly he completes a two-year term on the editorial board of *Chemical Reviews*.

Executive Experience

To justify my use of the word executive in describing Dr. Volwiler, I need only say that he provides an excellent example. During his student days, he was under the guidance of men who inspired him with a zeal for chemistry and who promoted the development of his organizational bent. Dr. C. G. Derick, a dynamic and temperamental leader, and his successor, Dr. Roger Adams, were in charge of the organic work at Illinois. Dr. Volwiler was strongly influenced by both of these men, more particularly by Dr. Adams, whose very broad vision and whose capacity for organization were developed to an outstanding degree.

These influences, combined with an ability to understand, correlate and attack the many problems which necessarily arise in the field of chemotherapeutic research, have made it possible for Dr. Volwiler constantly to stimulate the complex research activities of Abbott Laboratories. He has long recognized the value of the research attitude and of competent research personnel in business enterprise. His far-reaching concepts of what can be done through scientific research have been an important factor in the success of his own company, and also have helped to set the research pattern for industry generally.

Let me recommend the thoughtful re-reading of his recent paper on "Organization of the Industrial Research Laboratory," which appeared in the May twelfth issue of *Chemical and Engineering News*. This admirably written exposition reveals the ideals that have motivated Dr. Volwiler throughout his administrative career.

As an executive officer of Abbott Laboratories, he, at the same time, serves his fellow-chemists by active participation in the scientific and general affairs of several societies. His executive skills have been particularly apparent to those who have worked with him as he has variously served the American Chemical Society, in earlier years as chairman of the Chicago Section and currently as a member of the Board of Directors of the Society.

Service to War Department

Dr. Volwiler's capacities as an investigator, editor, and executive, were effectively combined in his service to the War Department. He departed for London in March, 1945. His itinerary on the investigational tour of duty took him to Limburg, Germany, where in early April he began investigation of vaccine production at the I. G. Behringswerke. A few days later he was investigating chemical and pharmaceutical production at the I. G. plant at Hoechst, jumping then to the I. G. plants at Mainkur and at Griesheim. After a few days of report writing, he was back in Germany investigating pharmaceutical manufacture at the I. G. plants at Elberfeld and Leverkusen. On April thirtieth, he was in Paris submitting a brief report, and a few days later he was back in London. By the middle of May he had arrived in Munich, and there began a two week's survey of various German health institutes. He visited the University of Munich, Alpine Chemische Werke Kufstein, Chemische Fabrik Aubing, Hofmann La Roche, University of Freiburg, University of Tuebingen. In addition, he interviewed a number of the leading pharmaceutical research workers in various state institutes in Heidelberg and elsewhere. By the first of June he was back in London, by way of Paris, writing eight reports covering his tour.

His reports amply justified the judgment of the War Department in assigning him what normally would have been a three-man job. This is especially true, when it is noted that he had voluntarily joined a second project under the Surgeon General and had completed an investigation of the various medical institutes within his territory. To perform this valuable survey work so well required investigational ability, editorial prowess, and executive skill.

In honoring Dr. E. H. Volwiler, we, in a broader sense, honor the growing group of scientists concerned with the discovery, development, production, and distribution of important medicinal agents, designed to prevent, correct or alleviate the ill health of this nation and of the world.

Keating with Smith-Davis

K. J. Keating, F.A.I.C., is now general manager of the Smith-Davis Paint Company, 10751 Venice Boulevard, Los Angeles, 34, California.

D'Alelio with Koppers Company

Dr. G. F. D'Alelio, F.A.I.C., is now assistant director of research for Koppers Company, Inc., Pittsburgh, Pennsylvania. He was formerly manager of the High Polymer Research Laboratory of the Industrial Rayon Corporation, Cleveland. Dr. D'Alelio holds 248 patents which are largely in the field of plastics.

Golden Jubilee

DR. AUGUST MERZ

Dr. Merz Completes Fifty Years of Service

Dr. August Merz, F.A.I.C., completed fifty years of service with the American Cyanamid Company and its affiliates on October twelfth. At seventy-four, he is looking forward to continued service to the company as research adviser and consultant.

In 1897, Dr. Merz started his career with the company when he joined Heller and Merz, a partnership owned by his father, Henry Merz, and his uncle, Frederick Heller, which first manufactured ultramarine blue in this country. The plant developed from a small manufacturing unit to the producer of such dyestuffs as methyl violet, fuchsine, eosine, nigrosine, rosaniline blue, malachite green, and other dyes. Heller & Merz was purchased by the American Cyanamid Company in 1929. In 1930, its operation was assumed by Calco, and Dr. Merz became a vice president of Calco.

A graduate of Cornell University, he received the B.S. degree after having transferred from City College of New York. Following two years of graduate work at Cornell, he studied abroad at Heidleberg, Germany, and Ecole de Chemin Mulhouse, in Alsace. In 1934, he received an honorary D.Sc. degree from Rutgers University.

He was president of the Synthetic Organic Chemical Manufacturers' Association from 1926 to 1946. He was president of the New Jersey Chemical Society before it was merged with the American Chemical Society, when he became chairman of its North Jersey Section. He is a past president of the East Orange General Hospital, and vice president of the Newark Eye and Ear Infirmary. He is also vice president of the American Tariff League. He is member of the American Institute of Chemical Engineers, the American Association for the Advancement of Science, the American Pharmaceutical Association, The Chemists' Club, and Phi Gamma Delta.

We Present the A. I. C. Chapters

The objectives of THE AMERICAN INSTITUTE OF CHEMISTS are carried out locally through its twelve chapters. These chapters will be presented to our membership from time to time in THE CHEMIST.

The Los Angeles Chapter

Dr. Albert Salathe, *Chairman*

THE Los Angeles Chapter was chartered late in 1943 as a result of a visit of Dr. Gustav Egloff, then president of the A.I.C., with the members in Southern California.

The Chapter was designed to create a strong internal organization; to work toward greater cooperation with other organized groups of chemists; and to obtain meeting programs of general and varied appeal.

We have had vigorous meetings with good speakers. These have concerned themselves with professionalism almost to the exclusion of lectures on chemistry. We are interested in chemistry as a profession as well as in the state licensure of chemists, but we feel the former to be more important. We appreciate the high standards of the A.I.C., and we shall continue to stress chemistry as a profession.

Our secretary is Manuel Tubis, 11322 Delano Street, North Hollywood; the treasurer is Edwin B. Henderson, chief petroleum chemist, Los Angeles County Department of Weights and Measures. Dr. Herman Maisner, chemical engineer, Aerojet Engineering Corporation, Azusa, California, is Chapter representative to the National Council.

This coming season, we plan to have several meetings with competent speakers on professional subjects, as our members can get all the regular technical lectures they can assimilate by attending meetings of the numerous scientific groups in Los Angeles and adjacent cities.

Dr. Gustav Egloff addressed our October twenty-fourth meeting and helped us to get off to a good start on the present season's activities.

The Los Angeles Chapter's Chairman

Dr. Albert Salathe's avocation became his vocation, when eight years ago, he started his present business of purchasing and selling stamp collections, at 415 Kress Building, Long Beach 12, California. This "retirement" gave him time to read the Greek and Latin classics which he did

not find time to read in his earlier busy life, and it affords him an opportunity to concentrate on the problems affecting the civilization of today and tomorrow.

He holds the A.B. and A.M. degrees from Colgate University, and the Ph.D. in chemistry and physics from the University of Chicago, where he studied under J. Stieglitz, A. A. Michelson, and R. A. Millikan. He also attended Columbia to study under Alexander Smith. He belongs to Phi Beta Kappa, Sigma Xi, Alpha Chi Sigma, Pi Kappa Delta, and Phi Delta Theta. He has held various offices in the American Chemical Society.

He has taught at Colgate, Columbia, Chicago, Union, Iowa Wesleyan, Sweet Briar, Albany College of Pharmacy, Centenary, Syracuse, and the University of California at Los Angeles.

He has served as expert witness, consultant to numerous corporations, and lecturer on chemical and geological subjects. In 1938, he toured Europe to study the atom-smashing machinery in England, Germany, and France.

Many young people are grateful to Dr. Salathe for his advice and assistance, which he gives generously. Several Long Beach boys are now in college in the East because of knowing him.

His wide scientific background and his deep interest in culture and civilization especially qualify him to be a leader in professional activities.

German Chemical Plants Offered For Sale

Two German chemical plants are offered for sale to United States industrialists by the Foreign Liquidation Commissioner. One offering is a portion of the Dynamit A. G. Geestacht-Krummel. The other is parts of the reparations plant from the Paraxol at Lippoldsberg, Germany. The Krummel plant, nineteen miles southeast of Hamburg on the Elbe, contains twenty-one items used in the production of plastics. Parts of the plant at Lippoldsberg include a producing unit for formaldehyde and two units for the production of pentaerythritol. Inventories and information may be obtained from the General Disposals Section, Office of Foreign Liquidation Commisioner, 4th and Jefferson Drive S. W., Washington 25, D. C.

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How To Submit Your Invention To a Corporation

Paul L. Gomory
Patent Attorney, Sun Oil Company

(Excerpts from, "Problems Arising on Submission to Corporations of Patentable or Non-patentable Ideas or Inventions," an article in *Temple Law Quarterly*, Vol. XIX, No. 3)

MANY ideas and inventions nowadays are improvements in those subjects in which corporations are interested and in which the corporations have done extensive work. An effective and profitable way for an individual to dispose of his idea or invention is to sell it to a corporation. This is particularly so if he is to dispose profitably of his idea or invention without expenditure of funds which he will seldom have and which he may be unable to procure. The corporation by the very nature of its organization and large and efficient way of doing business is able to give to the consumer a good product at a low price. To do this it is essential that it feed on new ideas and inventions, many of which can and do come from without its organization.

With regard to the dealings of the corporation with the individual who wishes to sell his idea or invention to it, many corporations, by and with advice of legal counsel, have adopted certain policies which, it is a purpose of this note to point out, are necessary to the protection of the enterprise but which lead to an impasse if the individual does not wish to rely on the integrity of the corporate body and its agents. At this point arises a situation which causes delay and generally impedes the progress of the arts and sciences, which Article I, Section 8, Clause 8, of the United States Constitution was designed to ensure. This situation must be corrected if we are to enjoy in the future the accomplishments of individuals in those lines of endeavor in which corporations are interested, and if we are to continue to ensure the progress of the arts and sciences to the fullest possible extent.

The Problem

As stated, a real problem arises when an individual or outside person wishes to dispose of his idea or invention to a corporation in a profitable manner. This problem arises from the effort usually made by both parties to protect themselves, each against the other. On the one hand, the individual desires to protect him-

self against appropriation of his idea or invention by the corporation without proper compensation to him. On the other hand, the corporation desires to protect itself against unjustifiable suits brought by the individual.

The corporation may be working on the idea or invention at the time it is submitted by the individual. In fact, it may have developed completely the very idea or invention submitted by the time it receives the information. It may not desire to disclose to the submittor what it has done, perhaps because it does not wish the public to know, in advance of a pre-determined date, of the introduction of a new idea or product. It may also happen that the person to whom the submitted information is given for a determination of company interest therein does not know of the development of the idea or invention within his own organization. That such situations might arise can be appreciated readily when one considers the many widely scattered centers of endeavor within the modern corporate organization. Accordingly, the corporation wishes to protect itself against the submittor who might believe that his idea or invention has been taken from him unjustly when the corporation, after rejecting the idea or invention, uses it at a later date. Clearly, the corporation has a right not to disclose its business or knowledge to one submitting information to it. Yet unless it does so, when it eventually uses the idea or invention, it may appear to the submittor that he has been wronged. The corporation naturally wishes to protect itself against suits resulting under such circumstances, or to avoid them altogether . . .

Protective Procedures Adopted by Corporation

In view of the foregoing, many corporations which unquestionably are glad to receive ideas and inventions from individuals will not consider, on the basis of a confidential relationship, any idea or invention submitted to them for purchase, and so advise the submittor prior to dealing with him, because confidential relationships may create obligations which do not exist where a would-be seller and a prospective buyer are dealing at arm's length. These corporations will not consider an idea or invention on the condition that if it is not found of interest, it shall be kept a secret, for the reason that not infrequently it may be necessary to refer the idea or invention to a number of different members of the corporate organization to ascertain whether or not it is of interest, and since the organization is continually changing, while there may be no intention of giving the idea or invention any publicity, its secrecy cannot be assured.

When a person asks a corporation whether or not it would be interested in an idea, without disclosing the

same, the corporation is likely to reply that it does not wish to consider the idea at all. The corporation fears that it might be held on an implied contract at some time after receipt of the individual's idea although it may have been in the process of developing the same idea at that very time. Organizations, today, have become alert to their vulnerability to unjustifiable suits. Because of such expensive and time-consuming litigation they do not desire to deal with the individual on any basis from which a confidential relationship may be inferred or a contract implied.

Naturally, most submittors or inventors hesitate to simply hand over the fruits of their research or development without some protective conditions attached. Yet the corporation as a general proposition cannot afford to deal with them on that basis. Therefore, a problem still remains where the submittor desires to retain his rights by dealing in a confidential manner, as already indicated.

However, generally speaking, organizations will advise a person desiring to submit an idea or invention that he should proceed in one of several ways, depending upon the nature of the information desired to be submitted. Thus the inventor may proceed as follows:

Patentable Inventions

1. He may file an application for patent, wait until his patent has been granted, and then bring it to the attention of the corporation. A delay of about three years is involved here.

2. He may file an application for patent and then submit a copy of the patent application to the corporation for its consideration.

This is probably the best procedure to follow, but it should be noted that the individual inventor might ill-afford to part with his limited funds for such purpose.

3. He may make a written description and sketches of the invention, signing and dating both the description and the sketches, and later send an undated copy to the company for its consideration while the dated and witnessed original is retained for his own record. In order that he may be in a better position to prove the making of any such written description or sketch, he should have as a witness some person or persons who can understand the invention and who will sign and date the original proofs with a note that he has understood them.

However, the corporation will most likely advise the inventor in any case that any disclosure of an invention to it must be made with the understanding that it will give the disclosure only such consideration as in its judgment the invention merits, and that it assumes no obligation whatever further than to say whether or not it is interested in acquiring patent rights. The above is representative of a general attitude reason-

ably and justifiably adopted by most organizations.

It is to be particularly noted that no matter which of the above suggested procedures is employed the corporation expressly assumes no obligation other than those which may be imposed upon it under the patent laws and directly implies that it wishes the submittor to rely on those laws alone. Where there is a clear understanding that the inventor relies solely on such rights as he has under the patent laws there is much less likelihood of misunderstandings and consequent ill-will than would otherwise be the case.

From the foregoing it appears that, if the inventor desires to have his invention considered without undue delay, the best course for him to follow is to file an application for patent and to submit a copy of the application, without giving its date and serial number, to the corporation, making no effort to deal in a confidential manner but relying on his right under the patent laws should he eventually obtain a patent. By not giving the filing date and serial number of the application the inventor will not give to the corporation any clue as to when he made his invention. Of course, if it should eventually turn out that no patent is obtained the submittor will have no recourse if the corporation uses the idea without compensation acceptable to him since he will have disclosed it with no rights reserved. But if he follows this procedure he is more likely to have his invention considered . . .

Major Becomes Vice President of Merck

Dr. Randolph T. Major, F.A.I.C., has been elected vice president and scientific director of Merck and Company, Inc., Rahway, N. J. He has been with Merck since 1930.

Dr. George Washington Carver, chemist and educator, is pictured on a new United States stamp, to be issued January fifth. This purple, three-cent stamp bears a retort in the lower left hand corner.

Dr. Gustav Egloff, F.A.I.C., was re-elected chairman of the Petroleum Division of the American Chemical Society, at its meeting held in New York, September 15th to 19th.

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A. I. C. Welcomes Younger Chemists

Members of THE AMERICAN INSTITUTE OF CHEMISTS are frequently urged to tell their friends and associates about the INSTITUTE and to invite them to submit their applications for membership. Nevertheless, many members are forgetful, or perhaps they do not realize how much it means to others, and indirectly to them, when they do this simple thing in support of their profession.

Just recently, Dr. Foster D. Snell, president, A.I.C., received the following letter from a young man who evidently works in a laboratory where INSTITUTE members have missed an opportunity to inform their young associate about the A.I.C.:

"The publication of your society, THE CHEMIST, is available in the laboratory where I am employed, and I read it each month with great interest. For some time now I have been noticing a plethora of comments and suggestions to the effect that the future of chemistry, and in particular of THE AMERICAN INSTITUTE OF CHEMISTS, depends in greater or lesser part on the younger chemists. Almost all the speakers reported from your section meetings have advanced this or similar ideas.

"I feel myself to be in complete agreement with this notion, and, in so far as I know them, with the aims and objectives of the INSTITUTE. Yet, although I have been known to be a chemist for seven years, and have been continously employed as one since leaving the Army eighteen months ago, I have never been approached in any manner by the INSTITUTE or any of its members. If it is the intention of the INSTITUTE to attract younger members, it will have to take the initiative . . ."

There are undoubtedly many more young chemists who would be complimented by being asked to submit their applications for membership to the INSTITUTE. No matter how much they admire its objectives or need its support, they naturally hesitate to approach an organization whose members do not seem to want them.

INSTITUTE members can do no finer thing in support of the profession of chemist than to make these young persons feel "wanted", to discuss professional problems with them, to tell them about the A.I.C., and to invite them to apply for membership in the organization where they can have the benefit of advice and assist-

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ance from others interested in professional problems.

The future of the profession will be made by these young men. They should start considering professional matters now in an organization devoted solely to the problems and factors which influence the profession.

All interested persons can obtain information and application blanks by writing to:

Dr. Lloyd Van Doren,
Secretary
The American Institute of Chemists
60 East 42nd Street
New York 17, N. Y.

Membership in a profession is not purely a question of occupation. A man may perform all the steps of a scientific operation with machine-like precision and still be only a workman, because he can only interpret his findings in arbitrary terms. But if he approaches each task as a new experience that presents some new conditions for his consideration, he is practicing a profession rather than a trade. The state of mind, the approach to the project and the manner of conducting the project, determine whether one's occupation is professional, and not the surroundings among which the task is performed.

—Dr. George D. Beal, Chairman
American Pharmaceutical Association Council.

Necrology

Herbert R. Moody

Dr. Herbert Raymond Moody, retired director of the Department of Chemistry, City College of New York, died October 20, 1947, at his home in Vienna, Virginia, at the age of seventy-nine.

Dr. Moody was born in Chelsea, Massachusetts. He received the B.S. degree from Massachusetts Institute of Technology, and the A.M. and Ph.D. degrees from Columbia University. From 1901 to 1905, he was professor of chemistry at Hobart College, Geneva, New York. He joined the faculty of the City College of New York in 1905, becoming head of the Department of Chemistry, where he remained until his retirement in 1938, after thirty-three years of service.

During World War I, he was chief of the technical branch of the chemical division of the War Industries Board in Washington, D.C. In 1934, he served as assistant in the Administration Department of the National Recovery Administration. From July 1936, to June 30, 1941, he was chairman of the Division of Chemistry and Chemical Technology of the National Research Council. He was active in the scientific societies and served as chairman or member of various committees. He was sometime chairman of the Employment Bureau of The Chemists' Club, New York, N. Y.

The late Dr. Ellwood Hendrick once described Dr. Moody as "a man of unusually fine character who always gives his best. His judgment of men and measures is excellent. His scientific scholarship goes far beyond the courses of study. He keeps himself well posted in the progress of physical science; indeed he is unusually diligent in this respect. For instance, when Bragg's work on crystals first came out, he posted off to Oxford for a summer's special study to get the work clear in his mind."

After Dr. Moody's retirement in 1938, he and Mrs. Moody spent the summers at Sebago Lake, Maine, and the rest of the year at Vienna, Virginia, and in Florida.

He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1924, and a Life Member in 1939.

Robert T. Northcutt

Robert T. Northcutt, engaged in manufacture and consulting, at Rahway, N. J., died September 13, 1947, at the age of sixty-three.

He was born in Hubbard, Texas. He studied under Professor Remson at Johns Hopkins and at the College of Physicians and Surgeons in Baltimore. From 1905 until 1916, he was employed by the Bureau of Med-

icine and Surgery of the Navy Department, in Washington, D. C.

From 1916 until his death, he was engaged in development, experimental work, manufacturing, consulting and advising for numerous manufacturing concerns, especially in fields relating to food production which involved biological factors. Ten years were spent in the tropics, where he manufactured biochemicals, including vaccines and serums for the treatment of tropical diseases.

In Rahway, he maintained his own well-equipped experimental laboratory, and he generously offered its use without charge, to several young chemists without laboratory facilities who wanted to do some development work. He also developed and manufactured foodstuffs, and worked out methods of drying highly hygroscopic fruit sugars, such as those of pineapples and bananas, as well as methods of canning, drying, and powdering fruit products. He held a number of patents in several fields .

He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1929.

Philip A. Greco

Philip Anthony Greco was born April 4, 1915. He died January 17, 1947, following an attack of pneumonia.

He was educated at the University of Illinois, receiving his A.B. with honors in 1939. He was assistant in biochemistry in the Medical School at the University of Illinois in 1939 and 1940. While at the University of Illinois, he was president of the Elite Club. He took graduate work at Iowa State College and received the degree of Ph.D. in 1943. During his attendance at Iowa State (1941-1943) he held the position of research associate. He also held a fellowship in bacteriology and poultry products. Dr. Greco published "Pasteurization of Liquid Whole Egg" in the Iowa State College *Journal of Science* (1944). He was co-author with Dr. George F. Stuart and Dr. Alden R. Winter of a paper entitled, "Pasteurization of Liquid-Egg Products. I. Bacteria Reduction in Liquid Whole Egg and Improvement in Keeping Quality," (*Food Research,* Vol. 11, No. 3—May-June 1946—page 229).

Dr. Greco was a member of the Society of American Bacteriologists, Institute of Food Technology, and the American Association of Cereal Chemists. He also belonged to Sigma Xi, Omega Beta Pi, and Phi Rho Sigma. He was a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS.

In 1943, Dr. Greco joined The Fleischmann Laboratories as biochemist in charge of investigations on frozen eggs. In 1946, he was transferred to the Loudon Division of Standard Brands to take charge of

the frozen egg work at the laboratory at Terra Haute, Indiana. Shortly after he accepted this position he contracted the illness which caused his death.

He had a very agreeable personality and made many friends. He was a well-trained bacteriologist and had an excellent future before him.

Dr. Greco married Miss Eileen M. Weilmuenster. They had one child, a daughter, Charlotte, three years old.

—Dr. Charles N. Frey, F.A.I.C.

Alaskan Pulp Industry Planned

Four hundred thousand acres of Government - owned timber in the Tongass National Forest, Southeastern Alaska, will be offered at auction on a fifty-year contract basis, February 18th, by the Alaska Forest Service of the U.S. Department of Agriculture. The Alaskan pulp industry has a potential output of a million tons a year. It is expected that production will begin within two or three years.

Marvin J. Udy, F.A.I.C., consulting chemist, chemical engineer and metallurgist, Niagara Falls, N. Y., presented a paper on "Raw Materials and Their Effect Upon Electric-Furnace Design and Operation," at the regional meeting of the American Institute of Chemical Engineers, September 29th to October first, in Buffalo.

Commercial Chemical Development Association

The Technical Service Association of the Chemical Industry has changed its name to Commercial Chemical Development Association. New officers are: President, L. B. Hitchcock, The Quaker Oats Company; vice president, L. H. Flett, F.A.I.C., National Aniline Division of Allied Chemical and Dye Corporation; treasurer, C. D. Goodale, Commercial Solvents Corporation; secretary, A. J. Fisher, Jr., U. S. Industrial Chemicals, Inc.; directors, W. H. Bowman, Jefferson Chemical Company, W. H. Harding, F.A.I.C., American Cyanamid Company, H. E. Outcault, St. Joseph Lead Company, and J. J. Schaefer, Wyandotte Chemical Company. The Association is concerned with problems of marketing new chemicals and of expanding markets for existent chemicals.

Celanese Dedicates New Laboratories

The Celanese Corporation of America, at the opening of its central research laboratories in Summit, New Jersey, September 22nd, announced the establishment of a $1,000 annual professional progress award in chemical engineering to be administered by the American Institute of Chemical Engineers.

George Schneider, F.A.I.C., vice president and technical director of

Celanese, presided at the affair. "The staff of the central laboratories here," he said, "consists of groups of cellulose chemists, synthetic organic chemists, dyestuff chemists, physical chemists and chemical engineers. The greater part of the personnel was transferred from the corporation's research department at the Newark, N. J., and Cumberland, Maryland, plants . . . In general, the research work at the central laboratories is of a basic or exploratory nature carried out in laboratories or small scale pilot plants while the research work at our factories is usually carried out in large pilot plants or with plant scale equipment."

Technical Editorial Work Recommended to Women Chemists

Florence E. Wall, F.A.I.C., spoke on technical editorial work, at a meeting of the Division of Chemical Education of The American Chemical Society at its recent New York Meeting. She recommended this field as one which women chemists, "squeezed out of jobs since the war," might consider.

"Anyone that can interpret the wonders of science and technology to those that need to understand them, whether he or she does original writing or edits the effusions of others, should be considered a true missionary for science . . .

"As long as nothing is done officially to ensure uniform, adequate training in good English for chemists, there will always be a need for skilled technical editors."

Merck Awarded S.C.I. Medal

George W. Merck, president of Merck and Company, Rahway, N. J., has been awarded the 1947 medal of the American Section of the Society of Chemical Industry. Mr. Merck was director of the War Research Service, which was in charge of research in biological warfare during the recent war. The award was made for "outstanding accomplishments under his leadership in the field of pharmaceuticals." The presentation of the medal will be made November seventh at the meeting of the society of Chemical Industry, Hotel Commodore, New York, N. Y.

Moore with Smith, Kline & French

Dr. Maurice L. Moore, F.A.I.C., formerly with Frederick Stearns & Company, Detroit, Michigan, is now with Smith, Kline & French Laboratories, 800 North Delaware Avenue, Philadelphia, 23, Penna.

James G. Vail, F.A.I.C., vice president, Philadelphia Quartz Company, spoke at the banquet meeting of the American Institute of Chemical Engineers, held recently in Buffalo, N. Y. His subject was, "Challenge and Response—the Social Responsibilities of Scientists."

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RAYMOND E. KIRK, *At-Large*
HAROLD A. LEVEY, *Louisiana Chapter*
HERMAN MAISNER, *Los Angeles Chapter*
J. M. MCILVAIN, *Pennsylvania Chapter*
JOHN J. MISKEL, *New York Chapter*
E. H. NORTHEY, *At-Large*
FRANK S. MITCHELL, *Niagara Chapter*
DONALD PRICE, *At-Large*
G. L. ROYER, *New Jersey Chapter*
NORMAN A. SHEPARD, *At-Large*
MAURICE SIEGEL, *Baltimore Chapter*
W. D. TURNER, *At-Large*
LINCOLN T. WORK, *At-Large*
JAMES R. WITHROW, *At-Large*

October Meeting

The 240th meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held October 14, 1947, at The Chemists' Club, New York, N.Y. President Foster D. Snell presided. The following officers and councilors were present: L. H. Flett, F. A. Hessel, D. B. Keyes, R. E. Kirk, J. M McIlvain, J. J. Miskel, H. S. Neiman, E. H. Northey, N. A. Shepard, F. D. Snell L. Van Doren, and L. T. Work. A. J. Nydick and V. F. Kimball were present.

The minutes of the previous meeting were accepted. The Secretary reported on the current status of the

membership. He announced that Robert T. Northcutt, F.A.I.C., died September 13th.

Herman C. Lythgoe, F.A.I.C., was elected to Life membership.

The Treasurer's report was accepted.

The Secretary presented a letter from the Secretary of the Chicago Chapter, which suggested that INSTITUTE speakers be made available to students in the universities and colleges. The Council recommended that the other chapters of the INSTITUTE should be encouraged to carry on this activity. The chairman of the New York Chapter's Committee to contact colleges was asked to write up the plan of his chapter, and the Chicago Chapter was encouraged to take up the work in its area.

The chairman of the Committee on Employer Classification, Dr. E. H. Northey, presented a preliminary report to the effect that THE AMERICAN INSTITUTE OF CHEMISTS should issue a "Seal of Approval" to employers whose standards for the professional employment of chemists were adequate. The Committee is studying standards for this seal and will attempt to devise a practical rating scheme which will be reported later.

The chairman of the Committee on the Chemist in Public Health, A. J. Nydick, reported that he had prepared letters to the various states to survey the laws relating to the operation of laboratories in the public health field, and that replies are being received daily. In answer to a request from an American Chemical Society Committee in a related field, these findings will be made available to the ACS Committee.

L. H. Flett, chairman of the Committee appointed to arrange a program for the joint meeting of the Syracuse Section of the ACS and the AIC, to be held at Utica, N.Y., November 8th, reported that a suitable program had been prepared.

The councilor from the New York chapter, Mr. J. J. Miskel, reported that at a meeting of the Chapter's Council a discussion had indicated that older members of the A.I.C. could do much to interest younger chemists in the organization. With this in mind, Dr. Martin Meyer had prepared a statement indicating why he thought chemists should join the INSTITUTE. This statement was referred to the editor for publication in THE CHEMIST.

Dr. Snell referred to the applications for membership which are continually coming in, and said he would prepare another letter to the members asking them to recommend the names of younger persons who would qualify for the lower grades of membership.

Upon motion, the President was asked to appoint a committee to survey all those things which represent the A.I.C. visually, such as insignia,

stationery, etc. The following Committee was appointed to consider this subject: Dr. Donald B. Keyes, Mr. John M. McIlvain, Dr. Lincoln T. Work, and Mr. Lawrence H. Flett.

The following new members were elected:

LIFE MEMBER

Bruce, Harry E.
President and General Manager, Keystone Color Works, Inc., 151 W. Gay Avenue, York, Pennsylvania.

FELLOWS

Aalto, Toivo Reinhold
Chief Chemist, Heyden Chemical Corporation, Garfield, N. J.

Ashman, George C.
Research Chemist, The Parker Pen Company, Janesville, Wisconsin.

Barol, Alfred
Vice-President and Technical Director. Wyeth, Inc., 1600 Arch Street, Philadelphia 3, Pennsylvania.

Bernays, Peter Michael
Assistant Professor, Illinois Institute of Technology, Chicago, Ill.

Clopton, John Raymond
Senior Chemist, Texas State Research Foundation, Renner, Texas.

Eichelberger, Mark W.
Vice President, Lindsay Light & Chemical Company, 258 Ann St., West Chicago, Ill.

Firth, Frank Edward
Manager, Netting Research Department, The Linen Thread Company, 1100 Randolph Avenue, Milton 86, Mass.

Goetz, Paul Cudell
Chemical Director, Refinite Corporation, Omaha, Nebraska.

Greenwald, Willard F.
Research Director, Philip Morris and Company, 119 Fifth Avenue, NYC.

Harris, Lewis E.
Director, Harris Laboratories, Nebraska Theater Bldg., Lincoln 8, Nebr.

Hohfelder, Leonard P.
Chief Chemist, Barr Rubber Products, Inc., 1531 First Street, Sandusky, Ohio

Kucker, George
Medical Bio-chemist (Director), Elizabeth Bio-Chemical Laboratory, 1137 East Jersey Street, Elizabeth, New Jersey.

LaLande, William A., Jr.
Director of Whitemarsh Research Laboratories, Penn Salt Manufacturing Company, Box 4388, Chestnut Hill P. O., Philadelphia 18, Penna.

Louder, Earl A.
Technical Director, Pet Milk Company, Greenville, Illinois

Lowy, Benno
Owner, Pacific Chemical Laboratories, 617 Montgomery Street, San Francisco, California

Lutz, William Haviland
Technical Director, Pratt & Lambert, Inc., 75 Tonawanda Street Buffalo 7, New York.

Markland, William Raymond
Chief Chemist, John H. Breck, Inc., 115 Dwight Street, Springfield 3, Mass.

Marx, Walter S., Jr.
Vice President of Research, Printing Arts Research Labs, Inc. 17 San Marcos Building, Santa Barbara, California.

May, Ernest Max
General Manager, Otto B. May, Inc. 198 Niagara Street, Newark, N. J.

Oberfell, George Grover
Vice President in charge of research and development, Phillips Petroleum Company, Bartlesville, Oklahoma

Payne, John Howard
Director of Research, Pacific Chemical and Fertilizer Company, P. O. Box 48, Honolulu 10, T.H.

Rooker, William Abner
Technical Director, National Fruit Product Company, Inc., Winchester, Virginia.

Schepp, William John
President, Wm. J. Schepp Co., Inc., Manufacturing Chemists. *Director,* The Schepp Laboratories, Consulting and Research Chemists, 21-23 Summit Avenue, East Paterson, New Jersey.

Shakman, James G.
Vice President, Director, Pabst Brewing Company, 221 N. LaSalle Street, Chicago, Illinois.

Shilstone, Cecil Maxwell
Director, Shilstone Testing Laboratory, New Orleans, Louisiana.

Slayter, Games
Vice President in charge of research, Owens-Corning Fiberglas Corporation, Case Avenue, Newark, Ohio

Wood, Richard Cameron
Sales Engineer, General Aniline & Film Corp, 44 Madison Avenue, New York City, NY.

Yntema, Leonard Francis
Director of Research, Fansteel Metallurgical Corp., 2200 Sheridan Road, North Chicago, Illinois.

MEMBERS

Bernanke, Frederick L.
Assistant to the President, Fine Organics, Inc., 211 E. 19th St., New York 3, N.Y.

Elliott, Stanley B.
Assistant to the President and Technical Director, Ferro Chemical Corp. P. O. Box 76, Bedford, Ohio; 877 Union Commerce Bldg., Cleveland, O.

Howe, George Taylor
Plant Manager, Susquehanna Plastics, Inc., 150 Fifth Avenue, Hawthorne, New Jersey

National Council Meetings

Council meetings of The American Institute of Chemists will be held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on the following dates:

November 18th
December 16th
January 20th
February 17th
March 16th
April 13th

Jones, Judson W.
Vocational Examiner, New Jersey Rehabilitation Commission, 1060 Broad Street, Room 756, Newark 2, New Jersey.

Kronish, Philip
Research Chemist, Nuodex Products Co., 830 Magnolia Avenue, Elizabeth, New Jersey

Yarbrough, James Preston
Chemist, The Coca-Cola Company, 310 North Avenue, N.W., Atlanta, Georgia.

ASSOCIATE

Marwick, Gordon Edwards
Rubber Chemist, Rome Cable Corporation, Ridge Street, Rome, N.Y.

There being no further business, adjournment was taken.

Chapters

Baltimore

Chairman, Ralph W. Lamenzo
Vice chairman, E. S. Hauber, S. J.
Secretary-Treasurer, J. Bernard Edmonds
Executive Committee,
Dr. Walter H. Hartung
Edward M. Hanzely
Norris W. Matthews
Council Representative,
Maurice Siegel
Reporter to The Chemist,
Richard B. Treash

A record attendance of members and guests was made when the Chapter opened its 1947-48 season at a meeting October 15th at Loyola College.

Chairman, Ralph Lamenzo, called the meeting to order and introduced the speaker, Dr. Walter H. Kuhl of the McCormick Tea and Spice Company of Baltimore. In his excellent talk on flavoring materials, Dr. Kuhl drew from his extensive experience in this field.

This was the first lecture in the new series to be given by the Baltimore Chapter in which the everyday doings of Maryland chemists in local industries will be explained. On November 19th, the Baltimore Chapter will sponsor a visit to Hynson, Westcott & Dunning, a prominent Baltimore pharmaceutical house. The visit

will include a talk on penicillin by Dr. Roger Reid.

The program for the year will also include a talk on Microchemistry by Dr. J. D. Niederl and a visit to the H. B. Davis Paint and Varnish Company, with a talk by Dr. W. T. Pearce. Dates of these features will be announced.

For Your Library

ORGANIC ANALYTICAL REAGENTS. Vol. II. Frank J. Welcher, Ph. D. *D. Van Nostrand Company, Inc.* 1947. 530 pp. Series price $7.00; individual price $8.00.

The author and publisher of this comprehensive work on organic analytical reagents, of which the second volume has now appeared, have performed an important service in bringing together a wealth of information on a subject which is rapidly gaining in importance.

There seems to be no doubt that up to now many laboratories have not yet utilized to the fullest extent the possibilities that organic reagents have to offer in analytical work. The author warns us in his preface that since the treatment of the subject is intended to be complete, many inferior reagents and methods are included and in this respect the book is a challenge and a basis for further work. Consequently, an enormous job of proper evaluation and development of methods remains to be done but it is certain that this book, as well as its first volume, will aid materially in this work. The method of classification is a logical one.

The second volume deals with the use of acids, substituted acids, acyl halides, acid anhydrides, esters, amines and quaternary ammonium compounds.

The book is well indexed and is furnished with a multitude of references.

—William H. Van Delden, F.A.I.C.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. By Philip B. Hawk, Ph.D. Bernard L. Oser, Ph.D., and William H. Summerson, Ph.D. (12th Edition). *The Blakiston Company.* 1947. 1323 pp. 6½ x 9¼". $10.00.

Previous editions of this book have been given many favorable reviews. The need and popularity of this book is no doubt the reason for the twelfth edition, which retains the subject matter, form, and chapter outline of its predecessors, except for a few changes. The chapter on endocrine organs has been changed to a chapter on hormones, and enlarged to include the

17-Ketosteroids and related substances with their structural formulas.

A new chapter (36) has been added on "Antibiotics and Metabolic Antagonists," an ever-increasing and important subject. The appendix has been enlarged with new matter and tables, which include a comprehensive list on the composition of foods, giving the vitamins and important minerals of each.

Along with revision of the other chapters, valuable new material is included, such as electrophoresis, fractions of the blood plasma, theoretical discussion and practical applications of colorimetry and photoelectric equipment. The assay of vitamins is amply covered with physical, chemical, and microbiological procedures.

The volume still retains the Marsh test for arsenic, but in view of the favor given the Gutzeit test in other official books, such as the U.S.P. and the A.O.A.C., its omission is regrettable. The Dithizone method for lead is not given, although under the chapter on urine appropriate references are quoted. These are not major objections and future editions will undoubtedly include these.

About four-hundred new pages have been added and twenty-six new reagents listed. Some new changes in the arrangement of the index have been noted, as for instance, to the various items mentioned under urine and blood, where a separate listing is given under "Urine analyses" and "Blood analyses"; this is very helpful and a time-saver to the investigator.

This book has gained favor throughout the years and Hawk and the new authors are to be congratulated on keeping the volume up to date, and for the early appearance of the twelfth edition after a five-year interval. It is a valuable asset to the student, lecturer, physician, and biochemist, and it fills an indispensable place in the library.

—John T. Myers
—Israel Schwartz, F.A.I.C.

GENERAL CHEMISTRY. By John Arrend Timm. *McGraw-Hill Company*. 692 pp. 6"x9". $3.75.

This is a general text for first-year students in college chemistry, which covers briefly a generous assortment of subjects. The procedure of reasoning from general laws aids in condensation. The examples and easy, conversational style of writing lend interest to the presentation. The immature mind has been carefully analyzed, and the book is designed to instruct with a minimum of mental effort on the part of the student.

The article, "Research and Management" by Dr. Gustav Egloff, F.A.I.C., which appeared in the March 1947 issue of THE CHEMIST, was reprinted in the *Professional Engineer*, publication of The American Association of Engineers.

Suggested for Professional Reading

"Values" by Francis J. Curtis, F.A.I.C., vice president of Monsanto Chemical Company. Article reprinted in *Chemical and Engineering News* October 6, 1947, from *Chemistry and Industry*. This is a fine discussion of social and spiritual values presently ignored in industry, education, and government. "By recognizing that no business can be entirely an individual thing and likewise that its human parts are not machines but souls, industry would solve many problems now being attacked by non- experimental doctrinaires."

"Chemistry——A Profession". By Dr. Foster D. Snell, President, A.I.C. Article in *Chemical and Engineering News,* August 18th issue. A direct, frank, practical approach to a subject which is too often treated only theoretically.

"ECPD——A Challenge, "the fifteenth anniversary brochure of the Engineers' Council for Professional Development, 29 West 39th Street, New York 18, N. Y. Includes description, organization, and accomplishment, accredited schools and employment statistics of the profession.

"Federal Research Program," Vol. 2. Decribes the research projects of various government bureaus. (Certain restricted information is omitted.) Available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., Price 55 cents.

"Texas City, Texas, Disaster." Report by Fire Prevention and Engineering Bureau of Texas, 44 pages, 8½" x 11". Includes recommendations, maps of the area, and photographs. Published by the National Board of Fire Underwriters, 85 John Street, New York 7, N. Y.

"America's Needs and Resources: A Twentieth Century Fund Survey" which includes estimates for 1950 and 1960. By J. Frederic Dewhurst and Associates. 812 pp. Price $4.00. Published by The Twentieth Century Fund, 330 West 42nd Street, New York, N. Y.

Dr. Gustav Egloff, F.A.I.C., recommends:

"What Management Should Know about Research and Development in Industry," address delivered by Thomas M. Rector, vice president, Research and Development, General Foods Corporation, before the New York Section of the Institute of Food Technologists, January 15, 1947. "Thus we see that the profitable application of research results depends on departmental cooperation directed

by management." Reprints may be requested from the Chicago Chapter of The American Institute of Chemists, Mary Alexander, Secretary, 310 South Michigan Avenue, Chicago 4, Illinois.

"Management's Responsibility for Constructive Legislation." by R. Elmo Thompson, vice president, The First National Bank and Trust Company of Tulsa, Oklahoma. (Reprint from Mechanical Engineering.) "Only the management of business and engineers, working together, can make continuing jobs and they must not fail . . ."

Booklets

The Commercial Intelligence Division of the U. S. Department of Commerce announces that a mimeographed trade list of "Chemical Importers and Dealers" in the following countries, Guadeloupe, Netherlands, Austria, and Ceylon, is available at $1.00 per list for each country.

"Industrial Uses of Selected Minerals". A list of some 200 commercially significant minerals and their principal industrial uses, prepared by Ornan B. Smart of the Area Development Division of the U.S. Department of Commerce. Available from the Superintendent of Documents, Washington 25, D.C. Price 30 cents.

"Hazard Survey of a High-Voltage Electrostatic Process for Spray-Deposition and Dip-Detearing of Paints." N.B.F.U. Research Report No. 6. Request it from National Board of Fire Underwriters, 85 John Street, New York 7, N. Y.; or 22 West Adams Street, Chicago 6, Illinois; or Merchants Exchange Building, San Francisco 4, California.

"Dresinol", a booklet describing this chemical selective plugging agent for secondary recovery of oil by water flooding. Request it from Industrial Chemical Division, Hercules Powder Company, Wilmington 99, Delaware.

"Market Research", leaflet concerning the market research facilities offered by Foster D. Snell, Inc., 29 West 15th Street, New York 11, New York.

"New Pyro Surface Pyrometer. Catalog No. 160." Description and illustrations. Sent on request to The Pyrometer Instrument Company, 103 Lafayette Street, New York, N. Y.

"A Commercial Community—Coordinated for Production, Storage, World Wide Distribution." Large, illustrated, 36-page brochure describing the facilities of the New York Dock Company, 44 Whitehall Street, New York 4, N. Y.

"Specifications for Rewinding Motors with Silicone Insulation. Silicone Notes No. B-30-1." Available from Dow Corning Corporation, Midland, Michigan.

"Allegheny Stainless Steel in (1) the Meat Packing Industry; (2) the Petroleum Industry, and (3) the Dairy Industry." State which of these three booklets is wanted and address the request for it to Joseph T. Ryerson and Son, Inc., Box 8000-A Chicago 80, Illinois.

"Precision Laboratory Evaporator." Descriptive sheet. Available from Precision Scientific Company, 3737 West Cortland Street, Chicago 47, Illinois.

"Report on German Papermaking Industry." An investigation by the British Intelligence Objectives Subcommittee. Available for fifteen shillings from His Majesty's Stationery Office, London, England.

"Chemicals by Glyco," 100-page catalog, and leaflets describing products now freely available, may be obtained on request from Glyco Products Company, Inc., 26 Court Street, Brooklyn 2, New York.

"Brochure on Aldo 33", a glyceryl monostearate, used in the baking industry, is available from Glyco-Products Company, Inc., Brooklyn 2, New York.

"The New Universal Clamp", 4-page descriptive sheet, illustrated. Available from The Emil Greiner Company, 161 Sixth Avenue, New York 13, N.Y.

"Silicone Notes: DC 710 Silicone Oils. Eight pages of information about new silicone oils developed for high temperature lubrication. Dow Corning Corporation, Midland, Michigan.

Hercules Powder Company, Wilmington, Deleware, announces that Parlon, a chlorinated rubber base for concrete paints and other protective coatings, is now readily available, due to the completion of new production facilities and the improvement in supply of natural rubber.

"Price List and Catalog" of essential oils, balsams, aromatic chemicals, etc., for fourth quarter of 1947. Request it from Magnus, Mabee & Reynard, 16 Desbrosses St., New York 13, N. Y., or 221 No. LaSalle St., Chicago 1, Ill.

"Report PB34727 — Economic Study of German Synthetic Waxes. Part A. Formulas and methods of production of the I. G. Waxes as taken from Gersthofen Werke of I. G. Farben A. G. Part B. Application of all I. G. Waxes manufactured in the Oppau Werke. Translated by S S. Cosman and reviewed by P.

F. Dewey, F.A.I.C. Published in cooperation with the U.S. Office of Technical Services. Copies may be obtained from P. F. Dewey, 1516 Spencer Avenue, Wilmette, Illinois. Price $10.00 per copy.

"Cartesian Manostat — Improved Model." One-page description and pictures. Request it from The Emil Greiner Company, 161 Sixth Avenue, New York 13, N.Y.

"Analytical Services" of Foster D. Snell, Inc. Leaflet which will be sent on request to the company at 29 West 15th Street, New York 11, N. Y.

"Recreation in Industry," a guide for recreation leaders in industry, by Jack Petrill. $10.00. Sold by Industrial Recreation Bureau, Suite 853, 1775 Broadway, New York 19, N.Y.

"History of the Cosmetic Industry in the United States." A book prepared by Gilbert Vail for the Toilet Goods Association, Inc., 9 Rockefeller Plaza, New York, N. Y. Available to non-members of the Association at $3.00 per copy.

"How to make Friends with Labor," by Dr. Herbert S. Minot and Louis Zasloff, of the law firm of Minot and Zasloff. Includes analysis of Taft-Hartley Act. Spiral bound. $2.50. The Arco Publishing Company, 480 Lexington Ave., New York 17, N. Y.

Food Research

The Associates of the Food and Container Industry is a new organization made up of the Army Quartermaster Food and Container Institute and about one hundred food companies. The purpose is to give to commercial industry the Army's experimental research in the food field. The Associates will spend $100,000 a year to print research findings and distribute them to its members. Dues are $100 a year. The Army spends a million dollars a year on research at the Quartermaster Food and Container Institute in Chicago, and until now little information about its findings has been published.

ASSE Becomes Independent Organization

The American Society of Safety Engineers, which for twenty-three years has been an engineering section of the National Safety Council, became an independent organization on October seventh. The newly elected president is John S. Shaw, director of safety, Hercules Powder Company.

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Koenig with Armour Research Institute

Dr. Louis Koenig, F.A.I.C., has been named chairman of chemistry and chemical engineering research at Armour Research Foundation of Illinois Institute of Technology. Dr. Koenig was formerly chief of the research branch, Madison Square area of the Atomic Energy Commission (now known as the New York Directed Operations of the A.E.C.)

Story With Maryland University

Enoch F. Story, Jr., formerly instructor at Rhode Island State College, Kingston, R. I., is now with the Department of Chemistry at the University of Maryland, College Park, Maryland.

James G. Vail, F.A.I.C., has been appointed a member of the Consultative Committee to the Committee on International Relations of the Engineers Joint Council. This committee will serve as an advisory group to the State Department, and to the Engineers Joint Council representative on the U. S. National Commission of UNESCO.

Col. Harry P. Newton, F.A.I.C., assistant director of the Southern Regional Research Laboratory, New Orleans, has been appointed Commanding Officer of the 411th Organized Reserve Composite Group.

Industry Urged to Support More Research

Dr. Henry T. Heald, president of Illinois Institute of Technology, spoke on September 8th before a meeting of the Scientific Apparatus Makers of America in Chicago. His subject was, "Cooperation Between Industry and the Colleges." He urged industry to join education in a free partnership to maintain independent action and individual initiative in promoting the nation's scientific research and education.

"In 1915," he pointed out, "there were only one-hundred industrial research laboratories; in 1946, there were 130,000 persons employed in more than 2,400 laboratories at a cost of $750,000,000. In spite of this rapid increase, less than fifteen per cent of all companies having more than a half-million dollars gross sales annually are doing any research . . . I believe that industry must accept a greater responsibility for the encouragement of fundamental research and for the training of research workers in universities."

The Development of a New Dentifrice

Dr. Maurice L. Tainter, director of Sterling-Winthrop Research Institute, Rensselaer, New York, recently anounced that he and his staff have perfected a new dentifrice. The three years of research behind this product comprised "a splendid example of team effort involving the dentist, pharmacist, physical chemist, development chemist, research investigator, laboratory technician and production expert." In connection with these studies, Dr. Tainter and his staff adapted the glossometer, an instrument used to measure the degree of gloss in paints, to the measurement of the degree of polish of human teeth.

The new tooth paste contains aluminum hydroxide as the polishing agent, chosen for its fine particles, combined with a soapless detergent. R. L. Watkins Company, marketing division of Sterling Drug, Inc., are marketing this dentifrice under the name of "Lyons Tooth Paste." An initial $300,000 has been appropriated to cover an advertising campaign in newspapers and radio.

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Chemical Engineer, P. E. license. 15 years' experience processing industries, fine & heavy chemicals. Plant design, process development, cost & economics, technical service. Will consider consultant basis. Location open, New York preferred. Please reply to Box 110, THE CHEMIST.

Ralph A. Clark, vice president of J. T. Baker Chemical Company, Phillipsburg, N. J., announces the promotion of C. H. Slater to the position of assistant general sales manager.

Up-Grade Farm Crops

Dr. Waldo Semon, director of pioneering research for the B. F. Goodrich Company, speaking before the National Farm Chemurgic Council in Cincinnati, Ohio, October first, said that alfalfa, rich in protein, minerals, and vitamins, might well be converted someday into a palatable human food.

"As mechanization and scientific operation of farms increase, the threat of over-production of crops arises, but if crops are continually up-graded to yield much higher-quality foods, or to yield superior industrial materials and even luxury items, the farmer need never face a problem of over-production.

"Logoquant"

Dr. Johan Bjorksten, F.A.I.C., president of Bjorksten Research Laboratories, Chicago, announced, jointly with Bee Chemical Company and the Nash-Kelvinator Corporation, that a new treatment for polystyrene plastic has been devised. Known as "Logoquant," it is applied to polystyrene plastic to give mar resistance, solvent resistance, and reduced electrostatic attraction, which makes it possible to use polystyrene in many applications formerly restricted to higher-priced plastic materials. Nash-Kelvinator has licensed the Bee Chemical Company, Chicago, Illinois, to manufacture Logoquant.

Long Appointed Assistant Director

Dr. M. L. Crossley, F.A.I.C., director of research, Calco Chemical Division, American Cyanamid Company, announces the appointment of Dr. Robert S. Long, M.A.I.C., as assistant director of the Organic Section of the Research Department. After receiving the Ph. D. degree from the University of Illinois in 1940, Dr. Long joined Calco on July first of that year. In 1944, he was appointed assistant chief chemist of the Organic Section.

Chemical Confusion

The following paragraph is taken from the *New York Herald Tribune*, October 3, 1947:

> "PATERSON, N. J., Oct. 2.—Alex Masterson, court stenographer in Chancery Court, mentioned a few of his troubles today and showed his notebook to prove them. Taking testimony in a case concerned with a compound used to treat paper, Mr. Masterson listed the troubles in the following words: Monoethnalinesulphminate, triethnalinesulphminate, platicizer, amoniumsulphimide, hydroscopocies."

Chemists will note that the newspaper's typesetter evidently had further trouble with those words, or else the court stenographer had even more trouble than he thought.

Chemical Condensates

Ed. F. Degering, F.A.I.C.

"If morale is to be maintained at a high level and if we are to continue to attract those whom we desire to serve the needs of the college, and indeed the entire university, it is imperative that salary levels all along the line be raised at the earliest possible moment."

—Harry S. Carman,
Dean, Columbia College

In the past men were wont to say that certain things were "impossible." Today the scientist finds himself saying, "That can't be done—yet."

—*The Research Viewpoint*

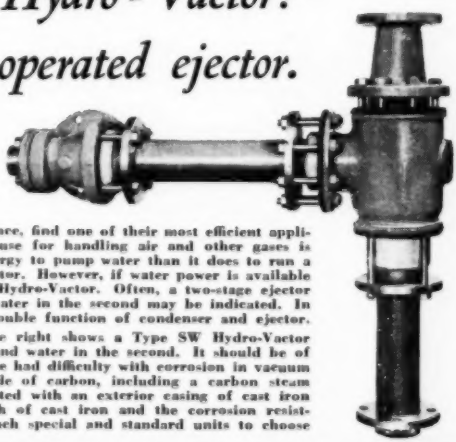
The light-reflection value of white paint is 85 per cent; yellow, 57 per cent; light gray 51 per cent; aluminum gray, 41 per cent, and black, 10 per cent.

I will never be quite willing to admit that this country is enlightened until we cease the insane and parsimonious policy of trying to drive all the really strong men and women out of the teaching profession by putting them on the payroll of one-half the rate, or less, than what the same brains and energy can command elsewhere.

—Elbert Hubbard

Q - What is a Hydro - Vactor?

A - A water - operated ejector.



A Hydro-Vactor is an ejector which uses water instead of steam as the motivating fluid. Generally speaking, steam is usually much more efficient. However, there are cases where a Hydro-Vactor fits better into certain industrial requirements.

Water-operated ejectors, for instance, find one of their most efficient applications in handling liquids. Their use for handling air and other gases is limited because it requires more energy to pump water than it does to run a mechanical pump or a steam jet ejector. However, if water power is available it can be used advantageously in a Hydro-Vactor. Often, a two-stage ejector using steam in the first stage and water in the second may be indicated. In this case, the water jet serves the double function of condenser and ejector.

The illustration above and to the right shows a Type SW Hydro-Vactor which uses steam in the first stage and water in the second. It should be of special interest to engineers who have had difficulty with corrosion in vacuum equipment. The steam stage is made of carbon, including a carbon steam nozzle. The carbon parts are protected with an exterior casing of cast iron —giving the equipment the strength of cast iron and the corrosion resistance of carbon. There are many such special and standard units to choose from.

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